REMARKS

Applicant gratefully acknowledges the examiner's reasons for allowing claims 1, 4-6 and 9-10. However, claims 11, 14-30 and 73-110 were still rejected, while claims 31-43 and 64-72 are withdrawn.

Claims 74-76, 91 and 95-97 have been rejected under 35 U.S.C. § 112, first paragraph, in relation to the feature "a corresponding address" recited in claims 74, 91 and 95.

Claims 74, 91 and 95, as well as dependent claim 14 which contains similar wording, have been amended to clarify what is meant by "a corresponding address".

These amended claims mention a common addressing mechanism applicable to first and second files. In other words, a given address, or two corresponding addresses, can point to two records of the first and second files which are associated with each other. Such an addressing mode is commonly used in computer programming.

The subject matter of these amendments are described in the specification which, in this respect, fulfills the written description requirement of 35 U.S.C. § 112, first paragraph. In the example given in page 23, the "first file" is referred to as a "rank file" and the "second file" is referred to as a "bitmap segment file". In Fig. 15-16, the rank file comprises the "L1/L2 Rank" column and the "Next" column of the table, while the bitmap segment file comprises the "L1/L2 Segment" column of the table (p. 23, l. 6-12). The common addressing mechanism is apparent since the indices of the "Address" column in Fig. 15-16 point to corresponding records of the rank and bitmap segment files, i.e. records found in the same row of the depicted table.

It is respectfully submitted that claims 14, 74-76, 91 and 95-97, at least as amended hereby, are acceptable under 35 U.S.C. § 112, first paragraph.

Concerning claims 74-76 and 95-97, as this was the only issue raised by the Examiner, Applicant considers these claims as also in condition for allowance.

Claims 18-30, 77-89 and 98-110 have been rejected under 35 U.S.C. § 112, second paragraph, in relation to the features "$1 \leq k \leq n$" and "any position retrievable form the data" recited in claims 18, 77 and 98.

These three claims have been amended to overcome the rejection by making the objected wording clearer. In particular, it has been specified that, n being a given integer at least equal to 2, a computer memory is organized to include at least one layer k data container for each value of a layer index k in the range $1 \leq k \leq n$. Hence this feature defines structure on which the claimed embodiment of the invention is based.

It seems that the previously wording was not found clear enough by the Examiner regarding the meaning of the parameter k. Applicant believes that the present amendment should dispel the Examiner's doubts.

The Examiner also questioned the significance of "k = 0". In response, it is pointed out that "0" is not a value that can be taken by the index k according to the claim language, so that the Examiner's point is believed to be moot. The claims recite "$1 \leq k \leq n$", and the layer index "k–1" is mentioned only when $k > 1$. So the case "k = 0" is not addressed by claims 18, 77 and 98.

The notion of "retrievable position" has also been clarified, by specifying that the data contained in the "first field" designate the position within the relevant subset of any integer of a layer k input list relating to a layer 1 input list. The "position retrievable from the data contained in the first field" thus corresponds to the position "designated by" such data. It is submitted that claims 18, 77 and 98, at least as amended hereby, comply with 35 U.S.C. § 112, second paragraph.

The wording of dependent claims 20, 23, 24, 79, 82, 83, 100, 103 and 104 has been adapted in accordance with the amendment made in claims 18, 77 and 98.

Concerning claims 77-89 and 98-110, as the rejection under 35 U.S.C. § 112, second paragraph, was the only issue raised by the Examiner, Applicant considers that they are now in condition for allowance.

Claims 11, 14-17, 73, 90 and 92-94 and 98-110 have been rejected under 35 U.S.C. § 102 as being "anticipated" by Burrows, US Patent No. 6,005, 503. This rejection is respectfully traversed for the reasons which follow.

The Examiners cites Fig. 1 and col. 5-6, where Burrows discloses a method for encoding integer lists by means of data structures referred to as "quad-words".

Specifically, the integer list 110 is first differentiated at 111-113 to produce delta values 101-103. Each delta value is then translated into a group of two bytes (1 byte = 8 bits) or, occasionally, slightly more than two bytes (col. 5, l. 57-67).

In the prior art which Burrows comments in col. 1, l. 22-37, each byte used in the coding of a delta value has one bit position reserved for containing a "continuation bit" whose value indicates whether one or more additional bytes follow for the encoding of the delta value.

In the method illustrated by Fig. 1, Burrows changes the data structure so that all the eight bits of each byte 120 become usable to encode the delta value, and the seven continuation bits 132-138 pertaining to seven bytes 120 of a quad-word 140 are grouped into an continuation bitmap placed at the beginning of the quad-word. The first bit 131 of the byte 130 comprising the continuation bitmap 132-138 is a termination bit set to one in the last quad-word 149 of the encoded list 100, and to zero otherwise in the preceding quad-words (col. 6, l. 12-17).

Hence, the encoded list 100 has a variable number of quad-words, and each quad-word 140 is composed of a first byte 130 containing a termination bit 131 and a continuation bitmap 132-138, and of seven bytes 120, with each delta value being represented by two bytes 120 or more.

The invention of Burrows is quite different from the invention as claimed in independent claims 11, 73 and 90.

First, Burrows' encoding method is not based on a division of an integer range into subsets according to a predetermined pattern, within the meaning of claims 11, 73 and 90.

The delta values D1-D3 take random values. If the binary representation of a delta value has a number of bits between 8(N–1)+1 and 8N (i.e. if the delta value falls between 256N–1 and 256N–1), then N bytes 120 will be necessary for its representation in a quad-word 140. So the only pattern that could be identified in Burrows is the one that gives the subsets $SS_1 = [0, 255]$, $SS_2 = [256, 256^2–1]$, $SS_3 = [256^2, 256^3–1]$, $SS_4 = [256^3, 256^4–1]$, etc. In Burrows' method, a delta value belonging to subset SS_N will be encoded by means

of N bytes 120. However, this is not the type of pattern which is referred to in independent claims 11, 73 and 90.

In each of claims 11, 73 and 90, the subsets are consecutive intervals consisting of the same number of integers. This feature is in contradiction with the above attempt to find a "predetermined pattern" in Burrows' disclosure. It is noted that the above subsets SS_N consist of 256^N-256^{N-1} integers, respectively, that is $255\times256^{N-1}$. The number of integers is very different from one subset to another. It increases exponentially.

Even if one skilled in the art had thought of modifying Burrows' encoding method to provide subsets of uniform size (while there was absolutely no suggestion to do so), he/she would have noted the incompatibility of such modification with Burrows' coding scheme. Burrows' method performs binary encoding of delta values. Inherently, the size of the intervals coded by a given number of bits increases exponentially with the number of bits.

It is thus submitted that the subject matter of claims 11, 73 and 90 is not only novel, but also nonobvious over Burrows.

Independent claims 11, 73 and 90 are thus believed to be allowable. The same conclusion would thus apply to claims which depend thereon.

Claims 18-30, in particular, further call for a number (n) of coding layer which is at least equal to two, whereby reference is made in each layer to a "predetermined pattern" providing subsets. In this case, it seems impossible to identify any patterns that could be defined layer by layer in Burrows disclosure.

It is respectfully submitted that the present response overcomes all the rejections made in the outstanding office action. The application is believed to be in condition for allowance.

Prompt allowance of the application is respectfully requested.

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